

Mineral Industry Surveys

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MANUFACTURED ABRASIVES IN THE FOURTH QUARTER 2006

The U.S. Geological Survey collects quarterly data on manufactured abrasives through its survey of producers. Manufactured abrasives included in this report are fused aluminum oxide, silicon carbide, and metallic abrasives. Where indicated, Canadian and United States data are combined to protect proprietary information. Except where noted, the quantities cited in this report are in metric units. All unit value calculations in this report are based on unrounded data.

Fused Aluminum Oxide

The total production during the fourth quarter of 2006 was estimated to be 5,000 metric tons (t) of regular-grade crude fused aluminum oxide with an estimated value of \$1.5 million. Only one company, which operates one plant in Canada, produced fused aluminum oxide. This total production figure has been rounded to the nearest 5,000 t to avoid disclosing proprietary data.

According to the U.S. Census Bureau, U.S. imports of crude fused aluminum oxide for 2006 through the month of November were 158,000 t valued at \$47.6 million, or an average of \$302 per ton. About 72% of the imports came from China, 22% from Venezuela, 3% from Canada, 2% from France, and 1% from other countries. Imports of crude fused aluminum oxide from China may not all be abrasive-quality material.

U.S. imports of refined and ground fused aluminum oxide for 2006 through the month of November were 37,100 t valued at \$43.8 million, or an average of \$1,180 per ton.

U.S. exports of fused aluminum oxide for 2006 through the month of November were 14,400 t. The exports were valued at \$38.1 million, or \$2,650 per ton. Canada received 34% of the exports that were shipped; Germany, 20%; Mexico, 12%; Japan, 10%; the United Kingdom, 6%; the Republic of Korea, 6%; and others, 12%.

The Department of Defense stores fused aluminum oxide in the National Defense Stockpile (NDS), but all of the NDS aluminum oxide has been authorized by law for disposal. During the fourth quarter of 2006, the Department of Defense did not sell any fused aluminum oxide abrasive grain. NDS reported that 4,256 t of fused aluminum oxide abrasive grain with an estimated value of \$1.7 million remained in the

stockpile. The NDS has sold all of the crude fused aluminum oxide in the stockpile (Janet Rollins, Defense National Stockpile Center, oral commun., February 9, 2007). No further stockpiling of crude fused aluminum oxide by the Department of Defense is anticipated. If the current authorized disposal rate and NDS sales schedules are continued, all of the stockpiled fused aluminum oxide abrasive grain could be sold by the end of 2007.

Silicon Carbide

Abrasive-grade silicon carbide is produced by one company in the United States. The total production during the fourth quarter of 2006 was estimated to be 10,000 t of abrasive-grade silicon carbide with an estimated value of \$4.9 million. This total production figure has been rounded to the nearest 5,000 t to avoid disclosing proprietary data.

Total U.S. imports of crude silicon carbide for 2006 through the month of November were 128,000 t valued at \$60.9 million; imports from China alone were 105,000 t valued at \$49.1 million. The average price of imported crude silicon carbide, excluding Chinese crude, was \$507 per ton; the average price of Chinese crude was \$469 per ton. U.S. imports of refined and ground silicon carbide for the same period were 38,100 t valued at \$47.9 million, or an average of \$1,257 per ton. During the period, China accounted for 82% of the crude material and 41% of the refined and ground material.

U.S. exports of crude silicon carbide for 2006 through the month of November were reported to be 8,790 t with a value of \$11.7 million. Exports of refined and ground silicon carbide were 10,100 t valued at \$14.2 million. More than 99% of the crude material was shipped to, in decreasing order, Norway, Mexico, Finland, Indonesia, and Germany. About 96% of the refined material went to, in decreasing order, Canada, Norway, Mexico, Japan, and Germany.

The NDS has sold all of the silicon carbide in the stockpile. No further stockpiling is anticipated.

Metallic Abrasives

Metallic abrasives information was collected from 12 companies operating 13 U.S. plants. During the fourth quarter

of 2006, five companies produced 48,600 t of steel shot and grit, a 3% decrease compared with that of the same period in 2005. At least one of the companies produced shot and grit from reclaimed material. Total third quarter 2006 production was valued at \$22.1 million, or an average of \$456 per ton. Total production for 2006 was 201,000 t valued at \$92.7 million. Total annual production in 2005 was 207,000 t valued at \$94.4 million; 2004 production was 193,000 t valued at \$87.8 million; 2003 production was 192,000 t valued at \$86.2 million.

Shipments of steel shot and grit in the fourth quarter of 2006 were 52,000 t valued at \$25.4 million, or an average of \$487 per ton, compared with shipments during the fourth quarter of 2005, which were 55,200 t valued at \$26.6 million, or an average of \$482 per ton.

During the fourth quarter, seven companies produced 624 t of other types of metallic shot and grit (primarily cut wire shot) valued at \$2.60 million.

Imports of all types of metallic shot and grit for 2006 through the month of November were 18,400 t valued at \$13.5 million for an average of \$732 per ton. Canada was the largest supplier, accounting for 63% of the tonnage imported.

Exports of all types of metallic abrasives for 2006 through the month of November were 20,800 t valued at \$22.8 million, or an average of \$1,092 per ton. Shipments to Mexico accounted for 43% of the exports; an additional 41% was shipped to Canada.

TABLE 1
MANUFACTURED ABRASIVES¹

(Metric tons, unless otherwise specified)

Source and product	2005		2006							
	Fourth quarter		First quarter		Second quarter		Third quarter		Fourth quarter	
	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
United States and Canada, production: ²										
Silicon carbide ³	10,000	\$4,900	10,000	\$4,900	10,000	\$4,900	10,000	\$4,900	10,000	\$4,900
Crude aluminum oxide, regular-grade	5,000	1,500	5,000	1,500	5,000	1,500	5,000	1,500	5,000	1,500
United States, production:										
Steel shot and grit	50,300	22,900	54,700	25,000	45,600	21,500	52,500	24,100	48,600	22,100
Other shot and grit ^{e, 4}	517	1,640	640	1,890	611	2,310	713	2,880	624	2,600
Total	50,800	24,500	55,400	26,900	46,200	23,800	53,200	27,000	49,200	24,700
United States, shipments:										
Steel shot and grit	55,200	26,600	57,900	28,100	49,300	24,900	56,900	27,800	52,000	25,400
Other shot and grit ^{e, 4}	559	1,910	610	2,180	647	2,610	680	2,890	579	2,470
Total	55,800	28,500	58,600	30,300	49,900	27,500	57,600	30,600	52,600	27,800

^eEstimated.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Quantities are rounded to the nearest 5,000 tons to avoid disclosing proprietary data; values are estimated.

³Includes materials for metallurgical uses and other applications.

⁴Includes cut wire shot and reclaimed shot and grit from primary producers.